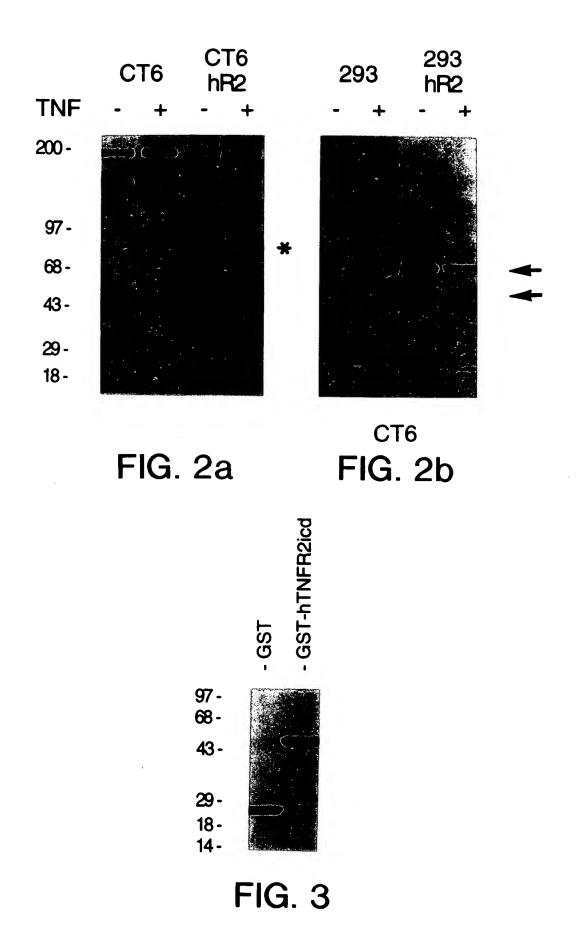


FIG.1



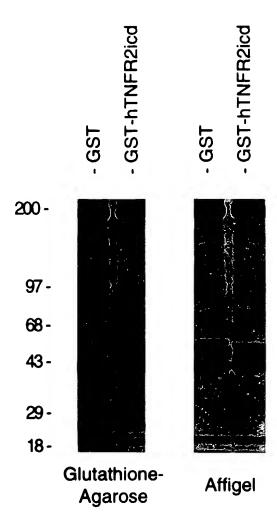


FIG. 4

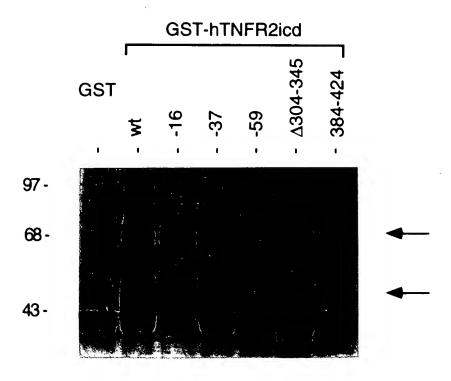
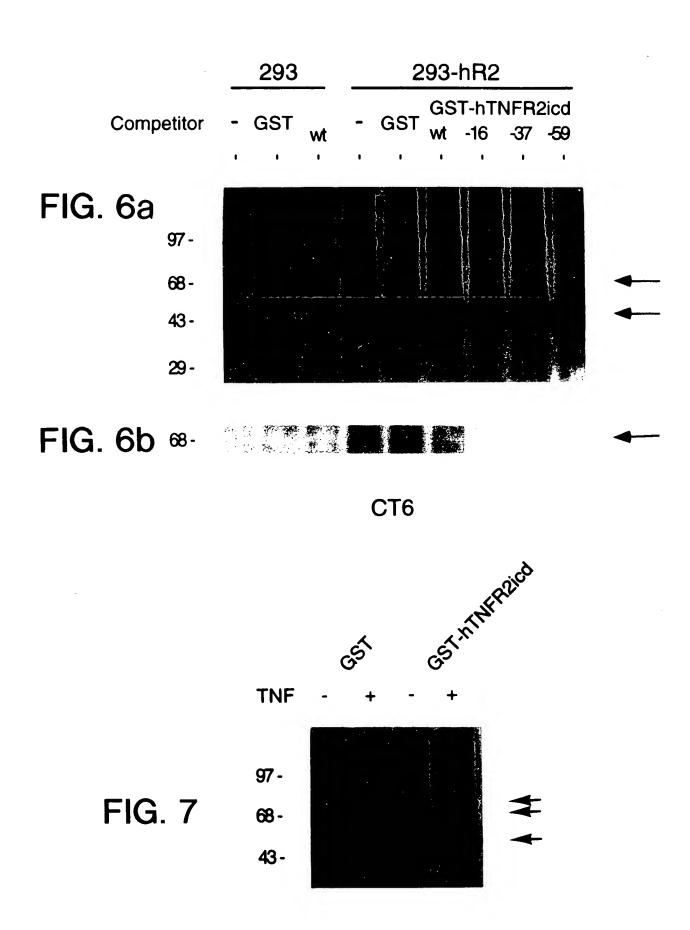


FIG. 5



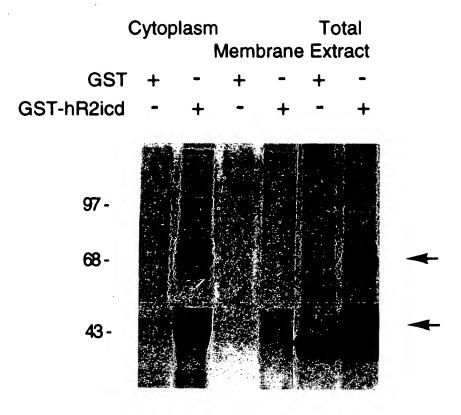


FIG. 8

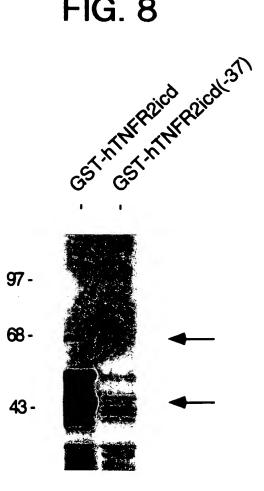


FIG. 9

1	CCCAGCCCGGTTCTCTGCCCCAAGGACGCTACCGCCCAATGCGAGCAGAAGGCGGCGCGCACAGATACAGAAAGT
74	GAGGCTCAGACATATTGAAGACCGTGTGACATAGGGTAGCCAAATGACAGTGTGAGAAAGTGACATTTACTCAAG
149	GCCACCCAGATATCCTGGAGGACCCAGAACCCTGGAGATTCCCATCAGAAAGACCTTCTGGCCACC <mark>TGA</mark> AACCCC
1	MetAlaSerSerSerAlaProAspGluAsnGluPheGlnPheGlyCysProProAlaProCysGlnAspPro
224	AAGATGGCCTCCAGCTCAGCCCCTGATGAAACGAGTTTCAATTTGGTTGCCCCCCTGCTCCCTGCCAGGACCCA
25	SerGluProArgValLeuCysCysThrAlaCysLeuSerGluAsnLeuArgAspAspGluAspArgIleCysPro
299	TCGGAGCCCAGAGTTCTCTGCTGCACAGCCTGTCTCTGAGAACCTGAGAGATGATGAGGATCGGATCTGTCCT
50	LysCysArgAlaAspAsnLeuHisProValSerProGlySerProLeuThrGlnGluLysValHisSerAspVal
374	AAATGCAGAGCAGACAACCTCCATCCTGTGAGCCCCAGGAAGCCCTCTGACTCAGGAGAAGGTTCACTCTGATGTA
75	AlaGluAlaGluIleMetCysProPheAlaGlyValGlyCysSerPheLysGlySerProGlnSerMetGlnGlu
449	GCTGAGGCTGAAATCATGTGCCCCTTTGCAGGTGTTGGCTGTTCCTTCAAGGGGAGCCCACAATCCATGCAGGAG
100	His6luAlaThrSerGlnSerSerHisLeuTyrLeuLeuLeuAlaValLeuLysGluTrpLysSerSer <b>ProGly</b>
524	CATGAGGCTACCTCCCAGTCCTCCCACCTGTACCTGCTGCTGGGGGTCTTAAAGGAGTGGAAATCCTCACCAGGC
125	SerAsnLeuGlySerAlaProMetAlaLeuGluArgAsnLeuSerGluLeuGlnLeuGlnAlaAlaValGluAla
599	TCCAACCTAGGGTCTGCACCCATGGCACTGGAGCGGAACCTGTCAGAGCTGCAGCTTCAGGCAGCTGTGGAAGCG
150	Thr6]yAspLeuG]uVa]AspCysTyrArgA]aProCysCysG]uSerG]nG]uG]uLeuA]aLeuG]nHisLeu
674	ACAGGGGACCTGGAGGTAGACTGCTACCGGGCACCTTGCTGTGAGAGCCAGGAAGAACTGGCCCTGCAGCACTTG
175 749	> ValLysGluLysLeuLeuAlaGlnLeuGluGluLysLeuArgValPheAlaAsnIleValAlaValLeuAsnLys GTGAAGGAGAAGCTGCTGGCTCAGCTGGAGGAGGTGCTGTGTTTGCAACATTGTTGCTGTCCTCAACAAG
200	GluValGluAlaSerHisLeuAlaLeuAlaSerIleHisGlnSerGlnLeuAspArgGluHisLeuLeuSer
824	GAAGTGGAGGCTTCCCACCTGGCACTGGCCGCCTCCATCCA

FIG. 10a

LeuGluGlnArgValValGluLeuGlnGlnThrLeuAlaGlnLysAspGlnValLeuGlyLysLeuGluHisSer TTGGAGCAGGGGTGGTGGAATTACAGCAAACCCTGGCTCAAAAAGACCAGGTCCTGGGCAAGCTTGAGCACAGT

225 899

## FIG. 10b

\* \* \*

LeuThr CTGACC GlucysProAlacysLysGlyLeuValArgLeuSerGluLysGluHisHisThrGluGlnGluCysProLysArg GAGTGTCCTGCATGTAAAGGCCTGGTCCGCCTCAGCGAGAAGGAGCACCCACACTGAGCAGGAATGCCCCAAAAGG SerLeuSerCysG1nHisCysArgAlaProCysSerHisValAspLeuG1uValHisTyrG1uValCysProLys AGCCTGAGCTGCCAGCACTGCAGAGCACCCTGTAGCCACGTGGACCTGGAGGTACACTATGAGGTCTGCCCAAG erValThrSerPro GTGTGACTTCCCCT GlySerLeuGluLeuLeuLeuGlnProGlyPheSerLysThrLeuLeuGlyThrArgLeuGluAlaLysTyrLeu**Cys** GGCTCCCTAGAACTGCTACAGCCTGGCTTCTCCAAGACCCTCCTGGGGACCAGGTTAGAAGCCAAGTACCTCTGT SerileLeuSerSerGlyProGlnAsn**Cys**AlaAla**Cys**ValTyrGluGlyLeuTyrGluGluGlyIleSerIle AGCATCCTCAGCTCTGGGCCCCCAGAACTGTGCTGCTGTGTGTTGAAGGCCTGTATGAAGAAGAAGGCATTTCTATT ASPG1yCySThrTrpLySG1yThrLeuLySG1uTyrG1uSerCySHiSG1uG1yLeuCySProPheLeuLheuThr GATGGATGCACTTGGAAGGGGACCTTGAAAGAATACGAGAGCTGCCACGAAGGACTTTGCCCATTCCTGCTGACG SCysArgValLeuCysArgPheHisThrValGlyCysSerGluMetValGluThrGluAsnLeuGlnAsp ATGCCGGGTTCTCTGCAGATTCCACACCGTTGGCTGTTCAGAGATGGTGGAGACTGAGAACCTGCAGGAT LysLysIleProArgGluThrPheGlnAspHisValArgAlaCys AAGAAGATCCCTCGGGAGGACGTTTCAGGACCATGTTAGAGCATGC His6luLeuGlnArgLeuArgGluHisLeuAlaLeuLeuLeuSerSerPheLeuGluAlaGlnAlaSerProGly CATGAGCTGCAGCGGCTACGGGAACACCTAGCCCTACTGCTGAGCTCATTCTTGGAGGCCCAAGCCTCTCCAGGA Serala**cys**LysAsnIleLeuArgArgProPheGlnAlaGln**Cys**Gly**His**ArgTyr**Cys**SerPhe**Cys**| TCAGCCTGCAAAAACATCCTGCGGAGGCCTTTCCAGGCCCAGTGTGGGCACCGCTACTGCTCCTTCTGC MetAlaAlaAlaSt TTGTGGTGTGGGGGTTGTAACTCACATGGCTGCAGCCA( PheProLeuThrCysAspG1yCysG1yLys| TTTCCCTTAACCTGTGATGGCTGTGGCAAG TT6666 CGCGAAGACC SerLys AGCAAA 235 750 135 450 160 525 210 675

FIG. 11a

nGlnValGlyProGluLeuLeuGlnArgCysGlnIleLeuGluGlnLysIleAlaThrPheGlu CCAGGTGGGGCCAGAGCTACTCCAGCGGTGCCAGATTTTGGAGCAGAAGATAGCAACCTTTGA

hrLeuAsn cctTGAAC

260 825

uAsn GAAC rArg61nHisArgLei cc66cA6cAcc66cT 31uA1aCysSer 3AGGCTTGTAGC ص νō Thrala GACTGCA lava] CAGT( Q O  $\neg \lor$ rgva] GGGTA αĀ 1U/ AG/ 00 \_ \ lG]uVa] .GAAGTβ <u>p</u>P αŪ SIL euAs TGAA sval CGT( 10ys CTG( eVa] TGT( 285 900

90 ysAspLeuAla AGGACCTGGC LeuLy CTCAA e61yL .c66c( I I E ysValGlnGlnLeuGluArgSer AGGTGCAACAGCTGGAGGAGGAGC/ GluAlaLeuSerAsnI GAGGCCTGAGTAAC I le( ATT( ഗഠ് A A A 回じ GINASE CAGGAC SD(

eSer A A T SO leTrpLys rcTGGAAG ITA 4spGlyValPhel SATGGGGTCTTCA  $\triangleleft \mathcal{G}$ GluLeuGluValSerThrTyr GAGTTGGAAGTATCCACCTAT ysvalserG AAGGTCTCCG Inl.) AGA/ 1 uG ] A G C *A* pLeuG] CCTGGA tAlaAsp GGCTGAC Me 1 AT( 335 050 rThrSer CACAAGC JA JaPhe Tyr JGCCTTCTAC SerProf CCCCAG eS I LePhe ATCTT JThrProAlaI JACACCAGCTA Q A aval*l* ceta( 361n61uA18 FCAGGAAGCO JLysarg( AAGCGT( 0 Thrargacher SpPheT ACTTCA 360 1125

Leu CTC LysMetCysLeuargValTyrLeuAsnGlyAspGlyThrGlyArgGlyThrHisLeuS AAGATGTGTCTACGAGTCTACTTGAATGGCGACGGCACTGGGCGGGGGAACTCATCTGT /rGLyTyrL \TGGCTACA SATAT 385

Leu TTG ||ThrLeuMet| |AACATTGATG SPÁlaLeuLeuGlnTrpProPheAsnGlnLysVa ATGCTCTGTTGCAGTGGCCTTTTAATCAGAAGGT/ ysG1yProAsnA AAGGCCCCAATG eValValMetL CGTGGTGATGA PhePhe TTCTT( 41(27

Pro |ThrSerSerSerPhe6|nArg| | AACCTCGTCCTCCTTCCAGAGG gProAspVa] SCCCGATGTA Argf AGG( ت ته TP TP NO ALGO IIIeaspa Gatcgacg luHisVal AGCATGTG 611 6A1 90 SNArg SNA: ACA/ QQ His/ CAT/ LeuAsr CTGGA( 50 43. 135(

Σď erT) SASDSE NA iluAlaLy AGGCCAA t6/6/ SMe 1 GAT( 1SerLy GTCCAA( SerglyCysProLeuPheCysProVa AGTGGCTGCCCCTCTTCTGCCCTGT VsnIleAlaS VACATCGCCA SDMetAS ΥÓ ValSer*f* GTCAGT( 05 46

FIG. 11b

## FIG. 12a

ETNVS <b>C</b> PQ <b>C</b> RET	TA	ett <b>C</b> PV <b>C</b> LQYFAEPMML D <b>C</b> G <b>H</b> NI <b>C</b> CA <b>C</b> LARCWGTA	ETT ${f C}$ PV ${f C}$ LQYFAEPMMI	13	(human)	RFP
DGKGN <b>C</b> PV <b>C</b> RVP	SNRN1	EVTCPICLELLKEPVSA DCNHSFCRACITLNYESNRNTDGKGNCPVCRVP	EVTCPICLELLKEPVSA	12	(mouse)	RPT-1
GNKE <b>C</b> PT <b>C</b> RKK	LRS	KE <b>C</b> L <b>H</b> RF <b>C</b> SD <b>C</b> IVTA	ELMCPICLDMLKNTMTTKECLHRFCSDCIVTA	16	(human)	RING1
ggsv <b>C</b> av <b>C</b> ror	GKG	ECGHSFCQECISQV	EVTCPICLDPFVEPVSI ECGHSFCQECISQV	13	SS-A/Ro (human)	SS-A/Ro
MGSYCPSCRYP	LKV	NCKHVFCRVCILRC	SISCQICEHILADPVET NCKHVFCRVCILRC	290	(human)	RAG-1
LSV DSK CPLCRAT	LSV	SCNHTFCSLCIRRC	AFRCHVCKDFYDSPMLT SCNHTFCSLCIRRC	31	(N. crassa)	UVS-2
QPNCPLCLFE	LNN	PCGHTFCSLCIRTH	LLRCHICKDFLKVPVLT PCGHTFCSLCIRTH	25	(S. cerevisiae)	RAD-18
SPYLCPQCRAV	VQG	ELSCSICLEPFKEPVTT PCGHNFCGSCLNETWA VQG	ELSCSICLEPFKEPVTT	10	(human)	5 F P
кѕрСРСС ѕо́н	LRN	ACGHSFCYMCIITH	DLLCPICMQIIKDAFLT ACGHSFCYMCIITH	49	(A. thaliana)	COP1
GPQN <b>C</b> AA <b>C</b> VYE	LSS	QCGHRYCSFCLTSI	KYLCSACKNILRRPFQA QCGHRYCSFCLTSI	31	(mouse)	TRAF2

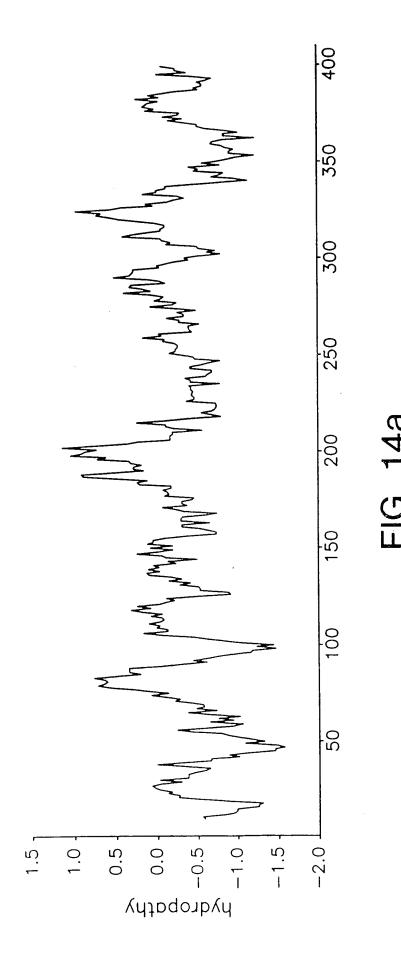
consensus

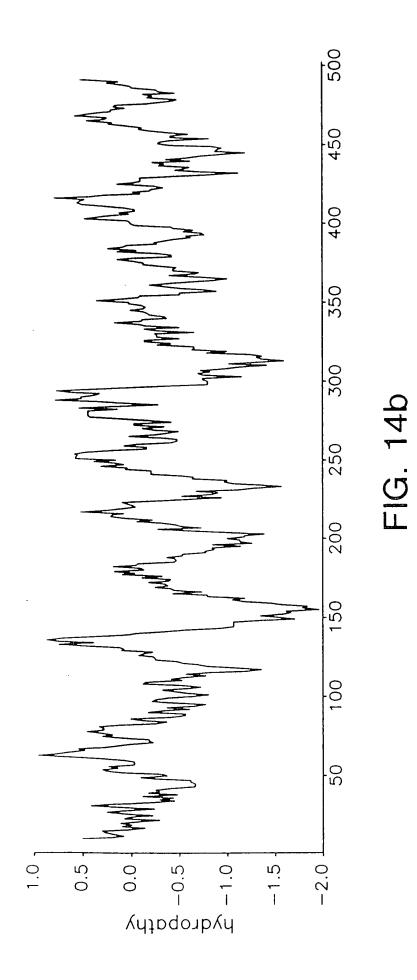
## FIG. 12b

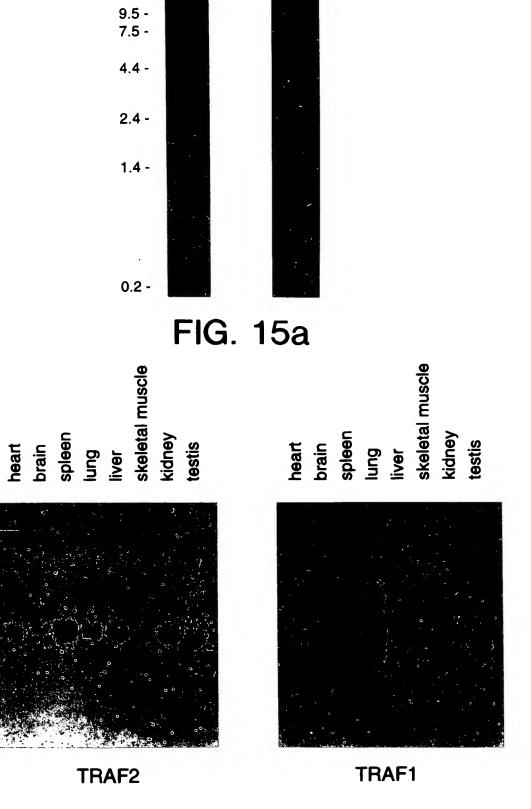
CQHC RAPCSHVDLEVHYE VC	157	mouse)	TRAF2 (m	TI
CDGCGKKKIPRETFQDHVR AC	182			
CDFCKRDDIKKKELETHYK TC	171	D. discoideum)	DG17 ( <i>D</i>	D
CDVCNRKFRHKDYLRDHQK TH	189	X. laevis)	TFIIIA (X	$\mathbf{T}^{1}$
CseCgksfmDkRylkiHsn vH	1	X. laevis)	XLCOF14 (X	X
CTVCGKKFIDRSSVVKHSR TH	1225	(X. laevis)	XFIN (X	X
CGECGKGFRHPSALKKHIR VH	521	(mouse)	ZFY1/2 (m	Z
CEECGKKFRTARHLVKHQR IH	293	(mouse)	MFG2 (m	М
CPICQQFYPLKALEKTHLD EC	183	(S. cerevisiae)	RAD18 (5	R
ACPICLTRM KEQQVDRHLDTSC	182	(N. crassa)	UVS-2 (1	U

```
1 MAAASVTSPGSLELLQPGFSKTLLGTRLEAKYLCSACKNILRRPFQAQCG
TRAF2
       51 HRYCSFCLTSILSSGPQNCAACVYEGLYEEGISILESSSAFPDNAARREV
TRAF2
TRAF2
      101 ESLPAVCPNDGCTWKGTLKEYESCHEGLCPFLLTECPACKGLVRLSEKEH
                                    . . . . . . . . MASSSAPDENEFQFGCPPA
TRAF1
      151 HTEQECPKRS LIS COHCRAPCS HVDLEVHYEV CPKFPLTCDGCGKKKIPRE
TRAF2
      20 PCQDPSEPRVLCCTACLSENLRDDEDRICPKCRADNLHPVSPG-SPLTQE
TRAF1
      201 TFQDHVRACSKCRVLCRFHTVGCSEMVETENLQDHELQRLREHLALLLSS
69 KVHSDV. - AEAEIMCPFFAGVGCSFKGSPQSMQEHEATSQSSHLYLLLAV
TRAF2
TRAF1
      251 FLEAQASPGTLNQVGPELLQR. . . . . . .
TRAF2
      116 LKEWKSSPGSNLGSAPMALERNLSELQLQAAVEATGDLEVDCYRAPCCES
TRAF1
      TRAF2
TRAF1
      308 RLDQDK; EALSNKVQQLERSIGLKDLAMADLEQKVSELEVSTYDGVFIWK
216 QLDREHLLSLEQRVVELQQTLAQKDQVLGKLEHSLRLMEEASFDGTFLWK
TRAF2
TRAF1
       358 ISDETTRKRQEAVAGRTPAIFSPAFYTSRYGYKMCLRVYLNGDGTGRGTHL
TRAF2
       266 IT N V T K R C HES V C G R T V S L F S P A F Y T A K Y G Y K L C L R L Y L N G D G S G K K T H L
TRAF1
       408 SLFFVVMKGPNDALLQWPFNOKVTLMLLDHNNREHVIDAFRPDVTSSSFQ
TRAF2
       316 SLFIVIMRGEYDALLPWPFRNKVTFMLLDONNREHAIDAFRPDLSSASFO
TRAF1
       458 RPVSDMNIASGCPLFCPVSKME-AKNSYVRDDAIFIKALVDLTGL
TRAF2
       366 RPOSETNVASGCPLFFPLSKLOSPKHAYVKDDTMFLKCIVDTSA
TRAF1
```

FIG. 13







TRAF2

TRAF1

9.5 -7.5 -

4.4 -

2.4 -

1.4 -

FIG. 15b

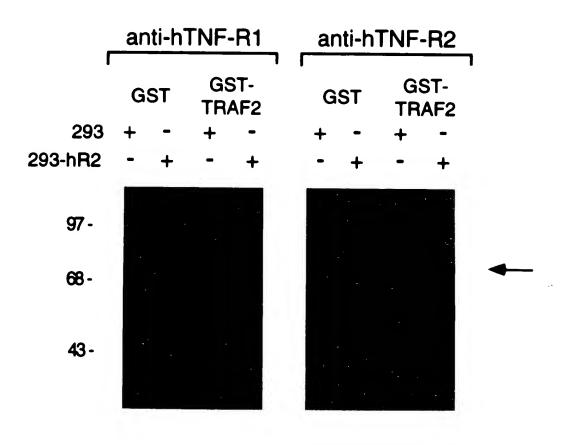


FIG. 16